

Engaging Girls in Physics:
Expanding Horizons through Outreach to All-Girls Schools

Drexel University Chapter of the Society of Physics Students

Drexel University
3141 Chestnut St.
Philadelphia, PA 19104

Proposal Writers:

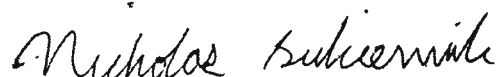
Wendy Harris, wbh25@drexel.edu



Robyn Smith, rms46@drexel.edu

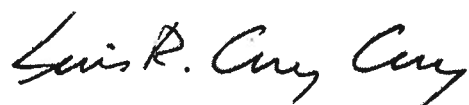


Nicholas Sukiennik, nrs59@drexel.edu



Faculty Advisor:

Dr. Luis Cruz Cruz, ccruz@drexel.edu



Date: October 15, 2012

Total Amount Requested: \$300

Tax ID: 23-1352630

Abstract:

The Drexel University Chapter of the Society of Physics Students focuses on public outreach. In order to encourage more women to pursue physics, we propose to create three types of outreach events: one for middle school girls, one for high school girls, and a workshop at the 2013 CATALYST Conference.

The Drexel University Chapter of the Society of Physics Students is an extremely healthy, active, and vibrant organization. Our membership consists of students from a variety of different academic programs, including physics, math, engineering, and biology. One of our main goals has always been to make physics accessible and appealing to the public and those who may not be exposed to it otherwise. To accomplish this goal, we fervently participate in outreach programs across the surrounding region and on our very own campus. In addition to appealing to people of different academic foci, we encourage people of all different personal backgrounds to learn about the sciences, especially those who have traditionally been underrepresented in its study.

More Recently, we took a closer look at our own department and realized that women are especially underrepresented. In 2005, the American Institute of Physics (AIP) found that approximately 22% of graduates with a Bachelor's degree in Physics were women. In June 2011, only 10% of the undergraduates in the Physics Department at Drexel University were women – half the national average. We feel that it is important to encourage more women to pursue further education in physics, especially at Drexel University, while at the same time making a conscious effort to retain those women who have already joined our department.

Working toward this goal, we propose to create a series of outreach events at various all-girls middle and high schools in the Philadelphia region to show how fun, interesting, and attainable a future in physics can be. We have organized and participated in many outreach events in recent years geared toward a variety of different audiences, from underprivileged students to competitive charter schools as well as the general public. We would like to utilize this experience to reach out specifically to younger girls. This year, our physics department has nine undergraduate women, and we believe that we can serve as role models for other girls interested in science. Our goal is to organize three types of outreach events: one for middle school students,

one for high school students, and a workshop at the CATALYST conference.

For the middle school girls, our outreach event would be centered on one fun, hands-on project that highlights one particular concept in physics. This type of workshop will get the girls interested and engaged at an early stage in their education and hopefully encourage them to explore more areas of physics. One proposed project idea is to have the girls create and decorate their own compasses – a practical tool that they may not have realized relates to physics. We can explain the basic physics of magnets in a simple way and have them create something of their own, as well as make it fun by decorating their compasses with paint, glitter, and stickers. Additionally, we would like to bring supplies in order to make liquid nitrogen ice cream with the girls at the end of the event.

We would like our high school outreach to have a slightly different focus as well as be at an academic level more appropriate for a junior or senior. For this event, we would set up several stations using our existing physics demonstrations and have smaller groups of girls rotate through the stations. Some demonstrations we would show include a bell jar vacuum, low friction miniature roller coaster track, and angular momentum wheel and turntable. Using several stations would allow us to demonstrate the breadth of topics physics covers while still presenting it in a fun and interactive way to get the girls involved. We would also conclude this event with liquid nitrogen ice cream. While eating, we could talk about some of the research we're currently involved in, let some of the women from our SPS chapter talk about their experiences as a woman in physics, and also answer any questions the girls may have about physics or college.

Finally, we would like to present a workshop at Swarthmore College's CATALYST conference in the spring of 2013. This conference is for middle school girls and is designed to get them interested in STEM fields with workshops on biology, chemistry, physics, math, and engineering. Last April, the undergraduate women in the physics department presented a physics

workshop where the girls and their parents made and decorated their own compasses, and it was a huge success. We are very much looking forward to presenting at this great conference again!

Supporting any underrepresented group in physics, like women, will directly benefit the larger scientific and general community. With diversity comes new ideas and new ways of thinking. Additionally, focusing on reaching younger students will help encourage the next generation of scientists, and maybe some of the girls we meet will actually be the future faces of physics. We hope that our outreach events will show and remind pre-teen and teen girls that the field of physics is alive and thriving and welcomes them!

Budget	
Compass Materials	\$ 100.00
Liquid Nitrogen Ice Cream Materials	\$ 95.00
Travel Expenses	\$ 105.00
Total	\$ 300.00

Compass Materials	
Cork	\$ 35.00
Magnets	\$ 23.00
Aluminum pie tins	\$ 2.00
Decorating supplies	\$ 15.00
Hot glue gun	\$ 10.00
Shipping	\$ 15.00
Total	\$ 100.00

Liquid Nitrogen Ice Cream Materials	
Chocolate syrup	\$ 19.00
Heavy whipping cream	\$ 60.00
Sugar	\$ 6.00
Spoons	\$ 5.00
Cups	\$ 5.00
Total	\$ 95.00

Travel Expenses		
CATALYST Conference	SEPTA Regional Rail	\$ 57.00
	Round trip weekend, zone 3	
	\$9.50/person x 6 volunteers	
Outreach Events	\$3.00/person round trip	\$ 48.00
	4 volunteers/event	
	4 events	
Total		\$ 105.00

AIP SPS

From: Robyn Smith <rns46@drexel.edu>
Sent: Monday, October 15, 2012 4:41 PM
To: AIP SPS
Cc: lrc42@drexel.edu; Wendy Harris; Nick Sukiennik
Subject: Future Faces of Physics Award Proposal
Attachments: futurefaces_proposal.docx

Categories: Junk

Hi,

Attached is a proposal for the Future Faces of Physics Award from the Drexel University Chapter of the Society of Physics Students. A picture of the proposal writers is also attached. From left to right is: Robyn Smith, Wendy Harris, and Nick Sukiennik.

Thanks,

Robyn Smith
Drexel SPS Secretary

